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Poliomyelitis in England and Wales in 1947

Coverage in DDT Spraying for Mosquito Control

Incidence of Communicable Diseases in the U. S.



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Public Health Reports

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INCIDENCE OF POLIOMYELITIS IN 1947

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In the United States the number of reported cases of poliomyelitis in 1947 was smaller than for any year since 1942. Compared with 1946, there was a reduction amounting to almost 15,000 cases or 60 percent. The provisional rate of incidence for 1947 (table 1) was 7.4 per 100,000 population.¹ Only four States reported definitely higher rates in 1947 than in the previous year (table 2).

TABLE 1.—*Number of poliomyelitis cases and deaths, case and death rates per 100,000 population, and number of cases reported per death in the United States, 1942-46*

	Total cases reported	Total deaths regis- tered ¹	Case rate	Death rate	Cases re- ported per death
1942.....	4,033	561	3.0	0.4	7.2
1943.....	12,449	1,151	9.3	.8	11.1
1944.....	19,029	1,361	14.3	1.1	13.3
1945.....	13,619	1,186	10.3	.9	11.4
1946.....	25,191	1,845	19.0	1.3	13.6
1947.....	10,734	(2)	7.4	(2)	(2)

¹ From reports of the National Office of Vital Statistics.

² Not available.

During the early part of 1947 the incidence of reported cases remained high for the country as a whole which was a carry-over of the high incidence in 1946 but after the middle of March the number of cases reported weekly remained relatively low compared with 1946.

Poliomyelitis occurred in epidemic proportions in relatively small areas in contrast to the widespread epidemicity in the previous year (table 2 and fig. 1). The States reporting the greatest number of cases were Ohio with 1,465 cases, New York with 1,189, California with 878, Illinois with 852, and Michigan with 653, but all of these States have large populations and with the exception of Ohio none of them had relatively high rates. The highest incidence per 100,000 population occurred in Idaho (72.1), Delaware (39.2), Rhode Island (18.9), Ohio (18.8), and in Nebraska (15.4). None of these latter States are contiguous.

¹ All morbidity data for 1947 used in this report are provisional. Data for prior years are from final reports submitted by States to the U. S. Public Health Service.

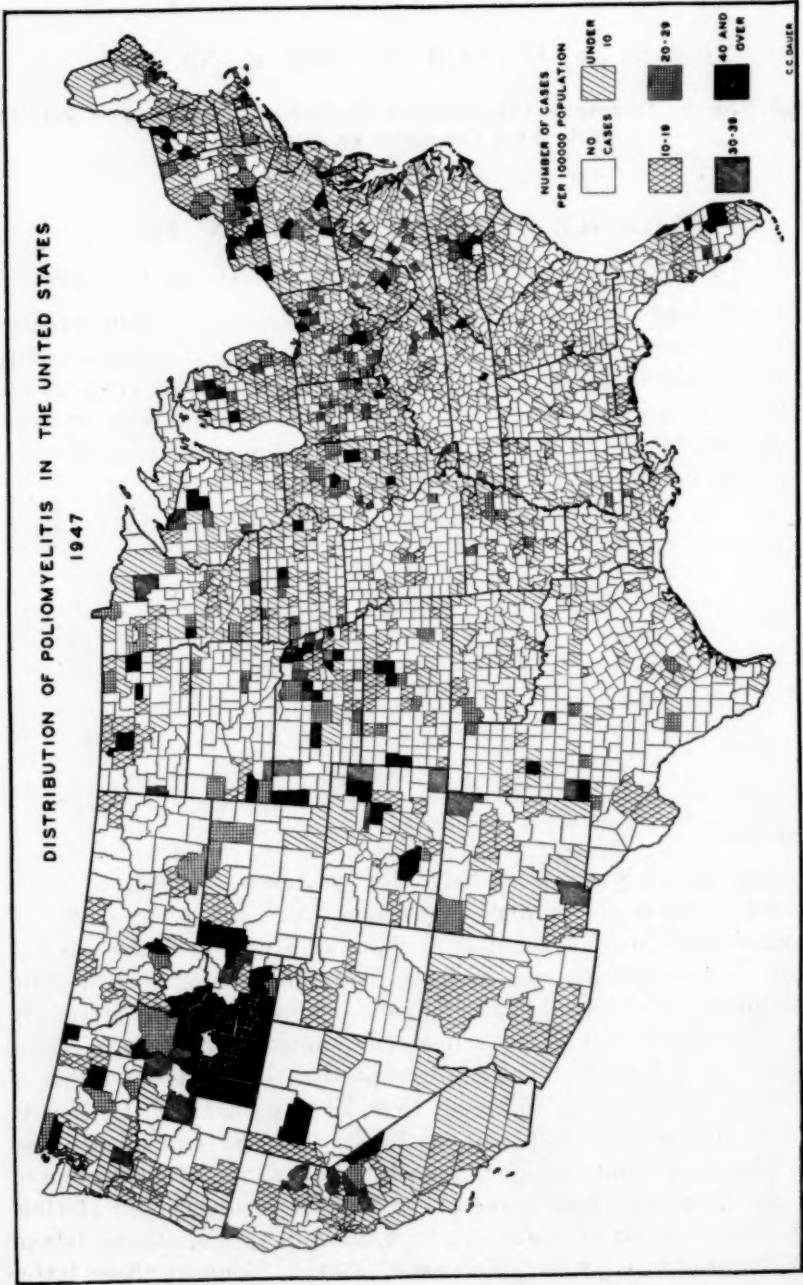


FIGURE 1.

The largest area where the disease was epidemic included most of the counties in southern Idaho, and a few in eastern Oregon and western Wyoming. In Idaho a group of 4 small adjoining counties, (Ada, Canyon, Gem and Payette) located in the southwestern part, reported 161 or 46 percent of Idaho's total of 352 cases. These four counties contain 3 percent of the land area and 20 percent of the

TABLE 2.—*Poliomyelitis morbidity and mortality rates per 100,000 population in the United States, 1944-47*

	Morbidity rates				Mortality rates ¹		
	1944	1945	1946	1947	1944	1945	1946
United States.....	14.3	10.3	19.5	7.4	1.0	0.9	1.3
New England:							
Maine.....	2.7	11.3	5.1	4.8	.4	.8	.3
New Hampshire.....	15.0	7.5	41.5	5.5	2.2	1.1	2.8
Vermont.....	13.3	19.3	23.2	10.9	.6	1.0	1.4
Massachusetts.....	10.6	12.6	9.2	7.3	.4	.5	.5
Rhode Island.....	1.8	1.1	11.9	18.9	0	.1	.9
Connecticut.....	12.5	11.9	6.8	6.6	.6	.6	.8
Middle Atlantic:							
New York.....	48.9	14.4	10.8	8.4	2.7	.7	.5
New Jersey.....	13.5	22.6	6.1	6.6	1.3	2.4	.6
Pennsylvania.....	15.7	8.5	3.7	4.6	1.3	.6	.3
East North Central:							
Ohio.....	17.1	6.7	10.4	18.8	1.3	.4	.8
Indiana.....	9.9	5.9	13.2	6.7	.9	.7	1.3
Illinois.....	7.4	14.3	33.1	10.3	.5	1.4	2.3
Michigan.....	16.4	3.9	19.9	10.4	.9	.4	1.4
Wisconsin.....	9.3	20.2	43.0	6.2	1.0	1.9	2.7
West North Central:							
Minnesota.....	22.1	11.5	127.4	8.7	1.5	1.2	7.5
Iowa.....	9.0	19.1	28.0	6.7	.7	1.1	2.0
Missouri.....	5.3	8.4	35.6	3.4	.4	.8	2.5
North Dakota.....	9.9	3.2	88.6	13.4	.4	.6	4.7
South Dakota.....	1.5	3.8	68.4	4.6	.5	.2	6.4
Nebraska.....	5.5	10.0	53.9	15.4	.8	1.0	4.2
Kansas.....	6.9	7.4	61.4	4.7	.6	1.0	4.8
South Atlantic:							
Delaware.....	33.9	10.1	11.1	39.2	2.1	1.0	1.0
Maryland.....	25.6	6.0	6.1	4.9	1.2	.2	.3
District of Columbia.....	21.5	14.8	4.0	2.7	1.3	1.1	.5
Virginia.....	27.3	10.9	4.6	5.8	1.8	.9	.5
West Virginia.....	12.8	3.8	4.4	7.8	1.4	.6	.4
North Carolina.....	26.7	4.5	4.4	8.1	1.1	.4	.4
South Carolina.....	3.1	9.9	1.1	3.4	.7	1.3	.4
Georgia.....	3.5	4.0	5.1	2.5	.4	.4	.3
Florida.....	5.0	6.0	23.9	4.7	.4	.6	1.8
East South Central:							
Kentucky.....	30.1	2.6	4.4	4.6	1.8	.5	.5
Tennessee.....	4.7	15.2	6.3	5.5	.6	1.6	.6
Alabama.....	3.8	5.4	13.4	1.7	.4	.9	.8
Mississippi.....	6.4	3.8	16.4	2.9	.4	.5	.8
West South Central:							
Arkansas.....	2.5	3.9	22.9	4.3	.3	.9	1.4
Louisiana.....	6.8	5.5	15.5	2.1	.5	.5	.9
Oklahoma.....	2.7	9.8	21.3	2.4	.4	.7	1.5
Texas.....	3.8	14.7	14.4	2.5	.7	1.9	1.4
Mountain:							
Montana.....	8.3	17.9	28.1	5.1	1.3	2.2	1.0
Idaho.....	3.2	4.8	9.6	72.1	.2	.8	.4
Wyoming.....	4.2	9.7	49.4	6.6	0	.8	2.5
Colorado.....	6.0	13.0	80.3	5.8	1.0	1.2	4.8
New Mexico.....	4.7	4.7	31.0	7.3	.8	.4	1.8
Arizona.....	6.0	4.0	23.3	5.5	1.1	.5	1.8
Utah.....	4.2	41.3	24.0	4.4	0	3.2	1.4
Nevada.....	7.1	6.8	10.0	5.0	0	1.3	2.1
Pacific:							
Washington.....	10.7	15.9	24.8	7.6	.9	1.2	1.5
Oregon.....	20.4	5.7	12.8	7.2	2.3	.6	.6
California.....	6.2	10.3	24.8	8.9	.4	.6	1.0

¹ Mortality rates by place of residence from reports of National Office of Vital Statistics.

population of the State. The rates varied from 142 to 167 per 100,000 population and although this group of counties had the highest incidence for any contiguous group in the United States in 1947 they were well below those for many groups of counties in 1946. The epidemic in southern Idaho occurred relatively late in the year, for in some counties the peak in incidence was not reached until November. However, cases were reported in various parts of the State throughout the early part of the year. The incidence for the State as a whole was higher than for any prior year for which data are available, the highest rate previously reported was 33.0 in 1934 when 156 cases were reported.

There were small areas in other parts of the country in which poliomyelitis was also epidemic (fig. 1). They were located in north central California, in Nebraska, northern Michigan, south central and northern Ohio, central North Carolina, Delaware, central Pennsylvania, western New York, Rhode Island, and northern Vermont. The usual number of scattered counties with high rates (40 or more cases per 100,000 population) due to one or more cases occurring in a very small population also appear on the map showing the distribution of the disease.

In 1946 poliomyelitis outbreaks were widespread not only in the United States but also in other parts of the Western Hemisphere, namely, in Canada, Cuba, Puerto Rico, and in certain Central and South American countries. There was no unusual prevalence in any of these areas in 1947 except in Canada. In the latter country about 2,500 cases were reported in 1946 and about 2,300 in 1947. The incidence was high in some of the eastern Provinces in 1946 and in the western Provinces in the past year (table 3).

TABLE 3.—*Poliomyelitis morbidity rates per 100,000 population in the Provinces of Canada in 1946 and 1947*

	1946	1947		1946	1947
Prince Edward.....	84.2	2.1	Manitoba.....	6.4	86.4
Nova Scotia.....	8.0	11.8	Saskatchewan.....	4.1	30.5
New Brunswick.....	15.5	4.1	Alberta.....	8.3	10.3
Quebec.....	48.4	4.1	British Columbia.....	2.7	37.6
Ontario.....	13.5	20.9			

In 1947 poliomyelitis occurred in epidemic proportions in several European countries. As reported elsewhere in this issue England and Wales recorded a higher incidence than for any previous year. The epidemic also appeared earlier than the usual seasonal occurrence of the disease. Higher incidence rates were also reported in Scotland, in certain parts of Germany, especially Berlin, in Austria, the Netherlands, Hungary, and Belgium.

POLIOMYELITIS IN ENGLAND AND WALES IN 1947¹

By W. H. BRADLEY, D. M., M. R. C. P., *Senior Medical Officer, and A. H. GALE, D. M., Medical Officer, Ministry of Health, London*

INCIDENCE AND MORTALITY

Some of the figures, notably those of deaths and of corrected notifications for the whole year, necessary for a full analysis of the recent epidemic are not yet available, but this short note based on present information may well preface the article which follows.

Incidence.—Original notifications of poliomyelitis and polioencephalitis, together for the 52 weeks ended December 27, were 9,199 (there were in addition 63 original notifications in the week ended January 3, 1948, which are included in the Registrar-General's year for weekly returns, i. e., 53 weeks in 1947). In 1938, the year of highest recorded incidence prior to 1947, before the present machinery for correction of notifications was instituted, there were 1,581 notifications of civilians, giving an attack rate of 3.8 per 100,000 population.

"Corrected" notifications of poliomyelitis and polioencephalitis for 1947 are likely to be between 7,500 and 7,600, giving an attack rate of about 18 per 100,000 population.

Mortality.—In 1938 there were 254 deaths, a crude death rate of 6 per million living and a case fatality rate of 16 percent. If the case fatality rate in 1947 proves to be rather lower—perhaps 10 percent—deaths are likely to number about 750, giving a crude death rate of about 18 per million living.

HOSPITAL INQUIRY

In October 1947, a questionnaire sent to a large number of hospitals throughout England and Wales brought 270 replies. The object was to gain information about the probable results of the epidemic. Hospitals were asked to include in the return all patients admitted between January 1 and October 11, 1947, with a tentative diagnosis of poliomyelitis or polioencephalitis. A copy of the questionnaire with notes on completion appears in the full report in the Bulletin of the Ministry of Health. The returns received relate to 6,762 patients admitted and in 4,717 the diagnosis of poliomyelitis or polioencephalitis was confirmed.

Size of sample.—It is not possible to relate hospital admissions and notifications directly because some practitioners notify cases on suspicion, whereas others wait until the diagnosis is confirmed in hospital. The Registrar-General supplies two sets of notification statistics, those published in the weekly returns which are described as original

¹ Condensed from the Monthly Bulletin of the Ministry of Health and Public Health Laboratory Service, vol. 7, March 1948, by kind permission of the Controller, H. B. M. Stationery Office.

notifications and those published in the quarterly returns which are described as corrected notifications. In the first three-quarters of 1947 there were 6,917 original and 5,765 corrected notifications. Assuming that the same ratio of original to corrected holds good for the slightly longer period January 1 to October 11, it means that the confirmed hospital cases (4,717) should include about 76 percent of the corrected notifications—a large sample.

Table 1 shows about one-third of the patients under age 5, about one-third between 5 and 15, and one-third over 15. However, only 14 percent of the deaths occurred in children under 5, 21 percent in children between 5 and 15, and 65 percent in persons over 15. The last column of the table expresses the increased fatality with age. It is possible that this may be due to some extent to a tendency for slight cases to be missed in older persons but this can hardly be a complete explanation.

TABLE 1.—*Age distribution of confirmed hospital cases and of deaths*

Age group (years)	Total number of cases	Paralytic cases	Deaths	Case mortality (percent)
All ages.....	4,717	3,461	¹ 360	7.6
Under 1 year.....	181	156	10	5.5
1-4.....	1,235	995	40	3.2
5-14.....	1,658	1,129	77	4.6
15-24.....	853	591	88	10.3
25-34.....	525	394	88	16.8
35-44.....	216	159	40	18.5
45 and over.....	49	37	17	34.7

¹ Includes 27 fatal nonparalytic cases.—Ed.

Type of the 4,717 confirmed cases.—2,976 patients (63 percent) had paralysis chiefly affecting the limbs or trunk; 485 (10.3 percent) had paralysis chiefly affecting cranial nerves; 1,097 (23.3 percent) had no paralysis but were diagnosed on the changes in the cerebrospinal fluid (769 cases) or on clinical grounds only (328 cases). In 159 patients, (3.4 percent) the symptoms and signs were indefinite but the diagnosis was made because of close contact with a definite case.

Degree of severity of the 3,461 paralytic cases.—333 were fatal and of the 3,128 in which the patient recovered 1,285 (41.1 percent) were classed as "mild"; 1,205 (38.5 percent) as of "moderate" severity and 638 (20.4 percent) as "severe." These figures should be accepted with reserve because it requires a long period of observation to assess the probable end results of a case of poliomyelitis with certainty.

Age distribution of patients with "moderate" and "severe" paralysis.—By definition "moderate" meant "likely to need a period of treatment in an orthopedic hospital but with a good prospect of an ultimate return to normal life." "Severe" meant "unlikely to return to normal

life." In all, there were 1,843 survivors in the "moderate" and "severe" classes and their age grouping was as follows:

Age group	Number	Percent	Age group	Number	Percent
Under 1 year	102	5.5	25-34	192	10.3
1-4	586	31.8	35-44	68	3.7
5-14	588	31.9	45 and over	12	.7
15-24	295	16.0			

These are probably the best figures on which to base estimates of the need for long-stay hospital accommodation. If "corrected" notifications for 1947 prove to be about 7,500 and these are regarded as equivalent to the 4,717 "confirmed" cases it may mean that some 40 percent, or 3,000 patients, will need long-stay hospital treatment. About one-third of these are likely to be under 5, one-third between 5 and 15, and one-third over 15, with a preponderance of males over females of about 5 to 4. It is difficult to make an estimate of the number of persons likely to be severely crippled as a result of the epidemic but it seems possible that it may be about 1,000.

TABLE 2.—Detailed analysis of hospital inquiry

	Males								Females							
	Under 1 year	1-4	5-14	15-24	25-34	35-44	45 and over	Total	Under 1 year	1-4	5-14	15-24	25-34	35-44	45 and over	Total
Paralytic limbs and/or trunk:																
Slight	19	185	227	81	46	20	5	583	22	131	144	100	62	20	4	483
Moderate	38	224	174	64	56	20	5	581	42	180	168	80	43	20	1	534
Severe	13	97	111	93	69	30	9	422	14	73	121	89	58	14	4	373
Total	70	506	512	238	171	70	19	1,586	78	384	433	269	163	54	9	1,390
Paralytic, other:																
Slight	4	38	63	18	5	4		132	1	21	37	14	5	7	2	87
Moderate	1	18	20	7	4	2	1	53		9	16	6	5	1		37
Severe	2	12	33	24	25	15	4	115		7	15	15	16	6	2	61
Total	7	68	116	49	34	21	5	300	1	37	68	35	26	14	4	185
Nonparalytic:																
With C. S. F. changes	12	97	224	110	48	19	4	514	1	32	93	68	44	15	2	255
Clinical only	1	40	103	31	13	6	2	196	5	24	53	25	13	11	1	132
Total	13	137	327	141	61	25	6	710	6	56	146	93	57	26	3	387
Presumptive	4	28	33	18	4	2	2	91	2	19	23	10	9	4	1	68
Not polio	33	271	456	189	86	64	48	1,147	34	159	320	182	105	57	41	898
FATAL CASES OF POLIO-MYELITIS AND POLIO-ENCEPHALITIS																
Paralytic:																
Limbs and/or trunk	3	9	19	32	23	13	3	102	1	10	16	17	17	9	2	72
Other	4	9	24	23	27	11	6	104		6	11	11	17	7	3	55
Total	7	18	43	55	50	24	9	206	1	16	27	28	34	16	5	127
Nonparalytic	1	4	6	2			2	15	1	2	1	3	4		1	12
Treated in respirator:																
Temporarily	1	14	40	41	24	13	3	136		5	22	25	22	7		81
Permanently	1	4	13	15	13	5	1	52		3	8	11	16	2	1	41
Total	2	18	53	56	37	18	4	188		8	30	36	38	9	1	122

Use of respirators.—In all, 310 patients were treated in respirators (males 188, females 122). 217 were treated temporarily and 93 were likely to need such treatment permanently. The mortality among patients treated in respirators was not ascertained.

Effect of pregnancy.—There were 760 confirmed cases in women of childbearing age (15–44) and of these patients 71 were pregnant, an incidence of 9.3 percent. A rough estimate of the probable incidence of pregnancy in an unselected sample of women of childbearing age based on the number of live and stillbirths in the whole year 1947 divided by the estimated female population (15–44) with an allowance for multiple pregnancies gives an incidence of 9.4 percent. In the sample as a whole, therefore, there does not seem to have been a high incidence of disease in pregnant women. One hospital reported no less than 8 pregnancies among 16 women of childbearing age and it is obvious that such an experience would lead those in charge to believe that pregnancy might be an important predisposing cause of the disease.

CONCLUSIONS

Generally speaking the findings are in accordance with those of other countries of Western civilization. They show the same relatively high age incidence as compared with the relatively low age incidence in countries of more primitive civilization. The greater severity of the disease in higher age groups is another feature which has been reported elsewhere.

QUARANTINE NOTICES

Pakistan

Information has been received that precautions against yellow fever are being strictly enforced in Pakistan. An airplane is permitted to enter that country without quarantine if the plane's log book record covering a 6-month period shows that the plane has not touched at an endemic yellow fever area and no passengers have been received from a yellow fever area while the plane was en route to Pakistan. Otherwise the plane must have a disinsectization certificate issued prior to arrival by recognized authority, and occupants of the plane must have certificates from recognized sources showing that they had been inoculated 15 days before arrival. Persons not complying with these requirements are subject to nine days' quarantine.

THE IMPORTANCE OF COVERAGE IN DDT RESIDUAL HOUSE SPRAYING FOR CONTROL OF *ANOPHELES* *QUADRIMACULATUS* MOSQUITOES¹

By R. H. McCauley, *Senior Assistant Sanitarian (R)*, R. W. Fay, *Senior Assistant Sanitarian (R)*, S. W. Simmons, *Senior Scientist, United States Public Health Service.*

During the summers of 1945 and 1946, the health departments of the Southeastern States, in cooperation with the United States Public Health Service, carried out widespread rural house-spraying operations with DDT for the control of the malaria mosquito, *Anopheles quadrimaculatus*. In this work only the walls and ceilings were treated. Biological evaluations of this type of residual spray coverage has shown it to be effective in killing mosquitoes in dwellings. Day-time resting places of *A. quadrimaculatus* have certain conditions in common. Roughly, such resting spots are limited to dark corners and dark surfaces behind and beneath furniture and such objects as pictures, clothing, etc. If suitable control of *A. quadrimaculatus* could perhaps be obtained by spraying only such preferred resting areas in a room, a considerable saving in time, labor, and materials would be possible in a large operational program.

In conjunction with a study of the effect of such limited residual coverage, consideration has been given to the effects of a method of spray application in which DDT coverage would be complete, that is including the likely resting places in a room in addition to those treated by a regular spray job such as that described above. If such a technique proved significantly better than that already in use, modifications in the present method might prove worthwhile.

The experiments described in this paper were performed during the spring and summer of 1946 to test the comparative effectiveness of DDT as a residual insecticide against *A. quadrimaculatus* when applied in three degrees of completeness of coverage to the surfaces in furnished unoccupied rooms.

PROCEDURE

The investigations were conducted in nine bedrooms of uniform dimensions, in an abandoned portion of a housing project on the outskirts of Savannah, Ga. In order to set up conditions resembling those in a furnished bedroom, these rooms were furnished with nine identical sets of simulated furniture made of cardboard and scrap lumber, and designed to offer resting conditions for *A. quadrimaculatus* mosquitoes similar to those in occupied rooms.

In applying residual spray the three coverage techniques mentioned above were used. In three rooms, spray was applied by the spot

¹ From Communicable Disease Center, Technical Development Division (Savannah, Ga.).

technique, i. e., to the undersides of furniture and pictures and the parts of the wall immediately behind them, and to the corners of the room and the angles between the walls and ceilings. In three rooms the furniture was removed during the application of spray which was then applied by the regular technique, that is, to the walls and ceilings. In the final three rooms the complete technique, a combination of the above two methods was used, spray being applied to the walls and ceilings and to the underside and backs of furniture and pictures. Thus, if the complete job is considered to have received 100 percent coverage, the regular job received 89.4 percent and the spot job 45.8 percent coverage.

The equipment used for spraying consisted of a 4-gallon-capacity, open-head, air-pressure, hand sprayer equipped with a straight wand and nozzle. The nozzle produced a 50° fan-shaped spray and delivered 0.2 gallons per minute at 40 pounds pressure. A pressure gage was attached to this apparatus for accuracy.

The spray used was a 5-percent-DDT emulsion made by adding six parts of water to one part of 35-percent solution of DDT in xylene containing 4 percent *Triton X-100*.² The surface was covered at the rate of 190 square feet per minute in order to obtain a deposit of 200 mg. of DDT per square foot. All spraying was performed by one experienced operator. In rooms in which walls and ceilings were treated, application was timed in relation to the delivery rate of the nozzle at 40 pounds pressure in order that the residue would be deposited as accurately as possible. The spraying of such small surfaces as the undersides of furniture was done at as nearly as possible the same rate as that used in spraying walls.

After spraying, the rooms were further prepared by laying wrapping paper on the floor to facilitate the recovery of knocked down mosquitoes and were then left undisturbed for about 3 weeks in order to be thoroughly dry and to eliminate any possible repellent action due to the effect of xylene or the emulsifier.

After this brief "seasoning" period, tests were begun to measure the comparative knock-down efficiency of the differently treated rooms against mosquitoes. Only insectary-reared mosquitoes were used, both for convenience and in order to preserve the uniformity of the test as much as possible. Since the resistance of *A. quadrimaculatus* to DDT may vary with age, all mosquitoes used were 3 to 4 days old.

In testing, a cage containing approximately 500 *A. quadrimaculatus* mosquitoes was carried into the room and opened to allow the insects to escape. During a release the door of the room was kept closed

² An emulsifier produced by the Rohm & Haas Co. of Philadelphia, Pa.

except to let the operator in and out, and the windows, equipped with screens, were raised.

At intervals of 15 minutes over a period of 4 hours after release, all knocked-down mosquitoes were removed from the room by means of an aspirator. Each of these lots of mosquitoes was enumerated by sex, and records of females only were used in making evaluations. It was found that this method gave an indication of the relative efficiency of the residual applications. After the first series of tests, the time interval between recoveries was extended to 20 minutes to enable one operator to run two tests simultaneously.

At the beginning of this work, knocked-down mosquitoes were held for 24 hours to determine what percentage, if any, recovered after knock-down. It was found that no recovery occurred so that for all practical purposes the knock-down and kill could be considered identical.

As a check on the condition of the mosquitoes during the 4 hours of each test, a small number (20-30) was drawn out of the holding cage before the actual test was started. These were held apart and examined for weak or fallen mosquitoes at intervals during the test period. It was unnecessary to repeat any tests because of weakness of the test insects.

The air temperature and relative humidity in each room was determined and recorded at the beginning and end of each test in order that the effect of any extreme fluctuations in these conditions could be noted. It soon became apparent that the effects of temperature and humidity could not be accurately evaluated in tests of this kind; therefore, these data were not used in this study.

Three series of releases were made at intervals of approximately 3 weeks, 10 weeks, and 16 weeks after spraying.

RESULTS

Table 1 shows the cumulative percentage of female *A. quadrimaculatus* knocked down at the end of each of the 4 hours during which the

TABLE 1.—Cumulative percentages of knock-down of adult female *A. quadrimaculatus* mosquitoes at the end of successive 1-hour periods during 4-hour exposures to residual deposits of DDT at 200 mg./ft.³ in furnished rooms with 3 degrees of completeness of coverage; figures are weighted averages of percentage of mosquitoes recovered in 3 similarly treated rooms

Type of coverage	Spot treatment (45.8 percent coverage)			Regular treatment (89.4 percent coverage)			Complete treatment (100 percent coverage)		
	21	68	112	20	69	114	21	70	114
Mean age of residue in days.....	23.9	3.8	3.6	33.0	10.3	10.4	53.0	29.9	22.6
Percent KD at 1 hour.....	61.5	26.2	19.9	82.4	54.9	53.9	96.4	83.9	71.4
Percent KD at 2 hours.....	78.4	50.4	36.6	94.0	76.0	77.2	99.7	94.0	91.2
Percent KD at 3 hours.....	85.9	63.5	56.8	97.8	85.1	89.4	100	99.2	97.3
Percent remaining alive ¹	13.9	36.4	43.4	1.7	14.8	10.9	0	.5	2.6

¹ The percent knock-down and the percent remaining alive do not total 100 percent, because these figures are weighted averages.

test was run. Each percentage is derived from a weighted average of the number of mosquitoes recovered in the three similarly treated rooms at the end of each time interval. Weights were assigned to each room in proportion to the square root of the number of mosquitoes released in each.

It was evident from the earliest tests that the spot treatment was inferior since the average cumulative knock-down of female mosquitoes at the end of 4 hours was only 85.9 percent, failing by more than 10 percent and nearly 15 percent, respectively, to achieve the effects of the regular and complete treatments. Subsequent tests substantiated these results and showed that the differentials increased with the age of the residue. It is readily understandable that other conditions being equal, a room with surfaces only partly covered by a residual insecticide will be less efficient in killing mosquitoes than one with a much greater proportionate area covered, as already noted by Tarzwell and Stierli (2). It is perhaps less obvious that the differences between the effectiveness of several degrees of coverage become greater as the deposit ages, since loss of knock-down efficiency occurs more rapidly in rooms with less area covered by DDT. This is clearly shown by the increase in number of minutes necessary to obtain a 50-percent knock-down as the DDT residues increased in age from 3 to 16 weeks. For the spot treatment this increase was 135 minutes, for the regular treatment 95 minutes, and for the complete treatment 40 minutes. The difference in residual effectiveness between the regular and complete treatments was less pronounced than between spot and regular treatments as shown in table 1, but was, nevertheless, definite.

The increase of the difference in effectiveness between the various treatments is apparently caused by the reduction in rapidity of knock-down which occurs with the aging of DDT residues. The percentage of mosquitoes remaining alive, as the action of the DDT residue became slower, was relatively greater in spot treatments, where only 45.8 percent of the available surfaces was sprayed, than in the more complete treatments. When the total untreated surface is large, irritated mosquitoes, even in a freshly treated room, can readily find harmless surfaces before receiving a knock-down or lethal dose of the insecticide. As the DDT ages and its action becomes slower, the exposure time necessary for knock-down increases and the chances that mosquitoes will not be knocked down in 4 hours are greatly enhanced. In rooms treated by the regular method, the untreated areas available to mosquitoes for escape from the irritating DDT residue are much smaller, more difficult for the mosquitoes to find, and when the knock-down rate of the residue is reduced with age, have a correspondingly smaller effect on the reduction of residual knock-down efficiency of rooms so treated. In those rooms treated by the complete method,

untreated surfaces available to mosquitoes are at a minimum; therefore, reduction in the rate of knock-down lacks the complicating factor of escape areas which tend to reduce the efficiency of a room as a killing chamber. The cumulative effect of this is illustrated graphically in figure 1 in which each curve is a composite of all knock-down data from each treatment. It follows that residue aging must be well advanced to affect materially the 4-hour knock-down efficiency of a complete treatment.

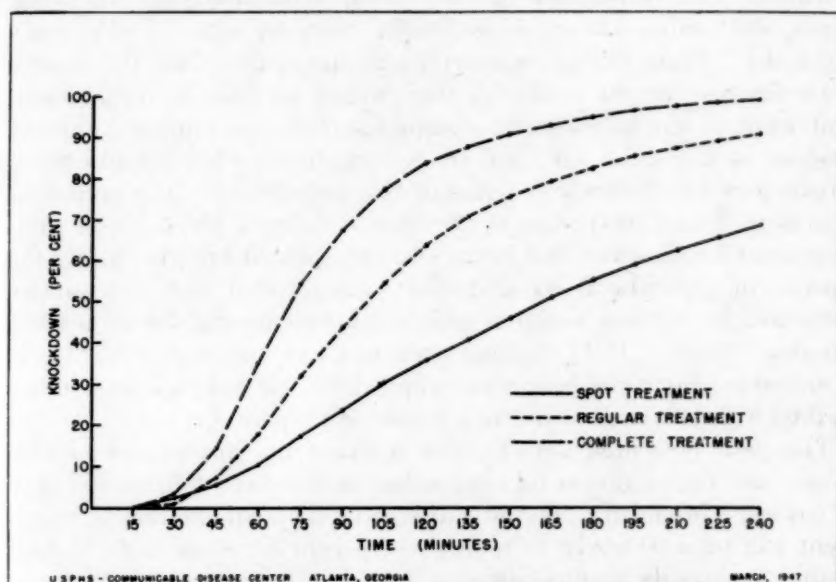


FIGURE 1.—Mean differences in effectiveness between 3 degrees of coverage calculated from cumulative percentages of knock-down of adult female *A. quadrimaculatus* mosquitoes at 15-minute intervals during 4-hour exposures to residual deposits of DDT at 200 mg./ft.² in furnished rooms; each curve drawn from combined data of three tests over a 4-month period using figures representing weighted averages of mosquitoes recovered in three similarly treated rooms.

From the standpoint of practical field operations, the spot treatment is not sufficiently effective to warrant general use. The question remains whether the complete treatment is sufficiently superior to the regular treatment to warrant recognition as the most practical method of application. Taking the 4-hour knock-down as a measure of effectiveness, the complete treatment, undisturbed, remains highly effective for at least 4 months.

Operational procedures on the extended malaria control program call for reapplication of a residue of 200 mg. of DDT per square foot after 3 months, using a technique approximating the regular treatment, here described, for all applications. Judging from present tests, the complete treatment is significantly superior to the regular treatment from the standpoints of both immediate knock-down and duration of effectiveness. The question then arises whether the complete

treatment is sufficiently more effective to eliminate the need of retreatment after as short a period as 3 months.

In order to develop a standard of comparison, it is necessary to consider the regular treatment in terms of operational spray treatment. In the regular treatment the 4-hour knock-down 3 months after application is 80-90 percent, as measured by these release studies, but is unknown for any operational application. However, spraying has been repeated before the effective toxicity of the previous treatment was considered to have been exhausted (3). In other words, the residue was considered satisfactory for a period of at least 3 months. From the experimental standpoint therefore, the knock-down figures "80-90 percent," though not necessarily numerically equivalent to the knock-down obtainable from operationally applied residues of the same age, will serve to indicate what constitutes a satisfactory knock-down in terms of this experiment. If a complete treatment is used, according to the present data, in which better than 90 percent knock-down in 4 hours can be expected experimentally for a period of 4 months, it is reasonable to assume that such a treatment operationally applied would remain suitably effective for at least 4 months. Since a DDT residue does not lose toxicity suddenly, it is probable that a residual spray applied by the complete-treatment method will remain effective for a much longer period.

The data presented here further indicate the importance of efficiency and thoroughness of application entirely apart from the type of coverage intended. The weaknesses of the spot method of treatment will tend to apply to rooms where poor coverage is accidental or due to slovenly application.

The decision between the regular or complete treatment in malaria control operations will depend on conditions prevailing in the area involved. Where funds, equipment, materials, or labor are a limiting factor, use of the regular method will permit more dwellings to receive treatment, with the probability of a greater effect on the general malaria problem than could be expected if fewer homes were sprayed by the complete treatment method. On the other hand, for individuals treating their own homes, or for operations where it is considered necessary to get the best possible control of the greatest number of kinds of insects, the complete treatment will probably be worth the extra effort and expense. Consideration must also be given to the relative need for respraying during a control season. Although additional data are needed the results of the experiments described above suggest that use of the complete treatment may make a second spray application unnecessary in some instances. It is therefore probable that one complete treatment would produce adequate control of *A. quadrimaculatus* at least in areas where the season of mos-

quito abundance lasts only about 4 months. It is possible that the effect of complete spraying may hold for a longer period, in which case two treatments would be unnecessary, even in areas where the control season is somewhat longer. The relative costs of regular treatment versus complete treatment are not known, although it is obvious that one complete treatment requires less over-all expenditure of funds, manpower, materials, and time than two treatments by the regular method. The implications are that due consideration should be given to the possibility of using complete treatment when plans are made for projected residual spray operations.

SUMMARY AND CONCLUSIONS

Tests made by releasing *Anopheles quadrimaculatus* mosquitoes in rooms in which varying amounts of surface were treated with a residue of DDT at 200 mg. per square foot indicated that (1) satisfactory control of this mosquito cannot be expected from a spot treatment in which only the predictable resting places in a room are sprayed; (2) coverage of the predictable resting places plus the walls and ceilings in a room is a more effective method of application than that in which only the walls and ceilings are sprayed; (3) the amount of total area covered with DDT not only affects the initial knock-down efficiency of the treatment of the room, but the residual quality as well; (4) based on the criterion of 4-hour knock-down, complete treatment is experimentally more effective than the regular treatment; (5) efficient application is necessary for the greatest residual effect of DDT spray.

ACKNOWLEDGMENTS

Gratitude is extended to Mr. W. H. Stillwell and Mr. R. L. Tallton of the Housing Authority of Savannah for their cooperation in making vacant dwellings at Deptford Place available for use in these tests. Acknowledgment is made to Mr. Fred Freeman for his unfailing help with many preparatory and routine aspects of these experiments. Particular thanks are due to Dr. W. M. Upholt for many helpful suggestions, particularly with regard to the analysis of data.

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INCIDENCE OF COMMUNICABLE DISEASES IN THE UNITED STATES

FEBRUARY 1-28, 1948

The accompanying table summarizes the incidence of nine important communicable diseases, based on weekly telegraphic reports from State health departments. The reports from each State for each week are published in PUBLIC HEALTH REPORTS under the section "Incidence of Diseases." The table gives the number of cases of these diseases for the 4 weeks ended February 28, 1948, the number reported for the corresponding period in 1947, and the median number for the years 1943-47.

DISEASES ABOVE MEDIAN INCIDENCE

Influenza.—For the 4 weeks ended February 28 there were 45,556 cases of influenza reported. Of the total cases, Texas reported 17,201, South Carolina 4,336, California 4,273, Arizona 3,696, Virginia 3,577, Arkansas 2,079, Alabama 2,050, Oregon 1,870, and Washington 1,345 cases—a total of 40,427 cases, which was about 89 percent of the total cases. The high incidence of this disease has been confined to the South Atlantic, South Central, and Far Western sections. In the Pacific section the number of cases was 13.8 times the median; in the South Central and Mountain sections the numbers of cases were more than twice the median and in the South Atlantic section the incidence was 1.3 times the median. Few cases have been reported from the North Atlantic and North Central regions. While the number of reported cases declined only slightly from the preceding 4 weeks, during the last week of the current 4-week period, the incidence fell in practically all of the above-mentioned States.

Measles.—There were 58,759 cases of measles reported for the current 4 weeks as compared with 20,417 in 1947 and a median of 48,914 cases for the corresponding 4 weeks in the 5 preceding years. Most of the current increase was due to an excess of cases in the East North Central and West South Central sections; in the former section the current incidence was more than 3 times the median while in the latter section the number of cases was 2.4 times the median. In each of the other 7 sections the number of cases was about equal to or lower than the seasonal expectancy.

DISEASES BELOW MEDIAN INCIDENCE

Diphtheria.—For the 4 weeks ended February 28 there were 834 cases of diphtheria as compared with a 5-year (1943-47) median of 1,165 cases. The median was represented by the 1947 incidence. In the Mountain section the number of cases (105) was 62 percent above the median and a negligible increase was reported from the

South Atlantic section, but in all other sections the incidence was relatively low. Of the total cases reported from the Mountain section 31 occurred in Arizona and 23 in Colorado.

Meningococcus meningitis.—The incidence of this disease during the current 4 weeks was slightly higher than that in 1947, but the number of cases (354) was only about 34 percent of the 1943-47 median for the corresponding period. In the New England and East South Central sections the numbers of cases were approximately twice the number reported for the same weeks in 1947 and minor increases were reported from the North Central and Pacific sections. The current incidence in each section was, however, below the median for the 5 preceding years.

Poliomyelitis.—The 111 cases of poliomyelitis reported for the 4 weeks ended February 28 was 60 percent of the number reported for the corresponding weeks in 1947 and 78 percent of the 1943-47 median. The Middle Atlantic, South Atlantic, and Mountain sections each reported a few more cases than might normally be expected, but in other sections the incidence was either the same as the median or fell below it. For the country as a whole the current incidence was the lowest since 1944 when 90 cases were reported for this same period.

Scarlet fever.—This disease continued at an unprecedented low level, 9,626 cases being reported for the current 4 weeks as compared with 11,017 in 1947 and a median of 16,265 cases for the corresponding period in the preceding 5 years. The incidence was below the median in all sections of the country with the greatest declines occurring in the North Atlantic sections and the smallest in the South Central sections. For the country as a whole the current incidence was the lowest for this period in the 20 years for which data are available in this form.

Smallpox.—Fourteen cases of smallpox were reported for the 4 weeks ended February 28. During the same weeks in 1947 there were 13 cases reported and the median for the preceding 5 years was 43 cases. Four cases occurred in the East North Central section, five in the West South Central section, and the remaining five cases were widely distributed over the country.

Typhoid and paratyphoid fever.—The number of cases (149) of these diseases was the lowest reported for these same weeks in the 20 years for which these data are available. In the East North Central section the incidence was 1.3 times the median for the 5 preceding years (1943-47), but in all other sections the incidence was below the seasonal expectancy.

Whooping cough.—The incidence of whooping cough (8,556 cases) was about 83 percent of the 1947 incidence for the same period and 91 percent of the median for the 5 preceding years (9,357 cases). The

greatest increase over the normal seasonal incidence was reported from the West South Central and Mountain sections and the greatest declines occurred in the North Atlantic sections.

MORTALITY, ALL CAUSES

For the 4 weeks ended February 28 there were 41,179 deaths from all causes reported to the National Office of Vital Statistics by 93 large cities. The median number for the corresponding period in the years 1945-47 was 39,599. The number of deaths was higher than the median for the 3 preceding years in the first 3 weeks of the current period, but during the last week of the period the number of deaths was 4 percent below the 3-year median.

Number of reported cases of 9 communicable diseases in the United States during the 4-week period Feb. 1-28, 1948, the number for the corresponding period in 1947, and the median number of cases reported for the corresponding period, 1943-47

Division	Current period	1947	5-year median	Current period	1947	5-year median	Current period	1947	5-year median
	Diphtheria			Influenza ¹			Measles		
United States.....	834	1,165	1,165	45,556	15,707	18,933	58,759	20,417	48,914
New England.....	27	75	30	17	65	127	2,290	6,036	5,527
Middle Atlantic.....	82	166	116	48	63	118	12,058	3,444	13,341
East North Central.....	130	176	160	472	169	477	22,596	3,471	7,455
West North Central.....	47	97	97	436	228	235	5,310	438	4,196
South Atlantic.....	166	160	163	8,918	3,893	6,738	3,294	3,376	3,298
East South Central.....	78	114	106	2,887	503	1,372	1,291	301	2,494
West South Central.....	129	169	232	20,503	8,484	9,817	6,492	786	2,669
Mountain.....	105	59	65	4,787	2,147	2,147	1,567	1,661	1,934
Pacific.....	70	149	156	7,488	155	542	3,861	904	3,574
	Meningococcus meningitis			Poliomyelitis			Scarlet fever		
United States.....	354	322	1,034	111	185	143	9,626	11,017	16,265
New England.....	23	13	41	2	7	3	702	1,038	2,036
Middle Atlantic.....	66	83	213	18	19	15	2,433	2,835	3,798
East North Central.....	45	42	151	9	30	9	3,258	3,391	4,181
West North Central.....	29	27	70	9	19	12	855	1,027	1,602
South Atlantic.....	44	44	161	29	26	21	676	742	1,159
East South Central.....	48	23	107	10	13	13	375	447	596
West South Central.....	41	43	94	8	17	15	217	236	506
Mountain.....	7	7	22	11	4	7	374	440	1,008
Pacific.....	51	40	107	15	50	34	736	861	1,100
	Smallpox			Typhoid and paratyphoid fever			Whooping cough		
United States.....	14	13	43	149	167	208	8,556	10,259	9,357
New England.....	0	0	0	9	10	10	711	1,147	1,141
Middle Atlantic.....	0	0	0	22	23	33	1,235	2,072	1,925
East North Central.....	4	5	16	31	23	23	1,725	2,597	1,625
West North Central.....	2	2	4	4	8	8	500	372	385
South Atlantic.....	1	0	2	34	31	38	1,035	1,219	1,246
East South Central.....	1	4	4	5	15	21	369	381	381
West South Central.....	5	1	15	23	29	38	1,643	1,545	1,181
Mountain.....	1	0	3	7	11	11	789	318	430
Pacific.....	0	1	1	14	17	17	549	608	608

¹ North Carolina, New York, and Pennsylvania excluded; New York City and Philadelphia included.

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UNITED STATES

REPORTS FROM STATES FOR WEEK ENDED MARCH 6, 1948

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Of 22 cases of poliomyelitis reported (last week 20, 5-year median 26), Idaho reported 6 (past 3 weeks 1). No other State reported more than 2 cases. The total for the year to date is 292, as compared with 539 for the same period last year and a 5-year median of 340.

Four cases of small pox were reported—2 in Kansas, and 1 each in Minnesota and Georgia. New York reported 1 case of psittacosis, and New York and New Jersey each 1 case of anthrax. Figures for the year to date above the respective median expectancies have been reported for the dysenteries (combined), infectious encephalitis, influenza, measles, Rocky Mountain spotted fever, and undulant fever.

Deaths recorded during the week in 93 large cities of the United States totaled 9,788, as compared with 9,765 last week, 10,206 and 9,885, respectively, for the corresponding weeks of 1947 and 1946, and a 3-year (1945-47) median of 9,885. The total for the year to date (10 weeks through March 6) is 103,504, as compared with 100,149 for the corresponding period last year. The number of infant deaths for the week in the same cities was 671, as compared with 600 last week and a 3-year median of 607. The total to date 7,087, as compared with 8,233 for the same period last year.

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Telegraphic morbidity reports from State health officers for the week ended March 6, 1948, and comparison with corresponding week of 1947 and 5-year median

In these tables a zero indicates a definite report, while leaders imply that, although none was reported, cases may have occurred.

Division and State	Diphtheria			Influenza			Measles			Meningitis, meningococcus		
	Week ended—		Median 1943-47	Week ended—		Median 1943-47	Week ended—		Median 1943-47	Week ended—		Median 1943-47
	Mar. 6, 1948	Mar. 1, 1947		Mar. 6, 1948	Mar. 1, 1947		Mar. 6, 1948	Mar. 1, 1947		Mar. 6, 1948	Mar. 1, 1947	
NEW ENGLAND												
Maine.....	1	1	1	-----	3	1	1	201	10	0	1	4
New Hampshire.....	0	0	0	-----				19		1	0	
Vermont.....	0	0	0	4	-----		5	150	114	2	0	
Massachusetts.....	6	14	6				837	450	450	0	1	8
Rhode Island.....	0	0	0			1	1	150	27	0	0	4
Connecticut.....	0	0	0	5	1	3	40	457	259	1	0	3
MIDDLE ATLANTIC												
New York.....	12	13	13	124	17	18	1,803	257	2,040	4	10	34
New Jersey.....	2	17	3	9	15	15	1,332	222	1,259	3	2	13
Pennsylvania.....	6	10	10	(?)	14	14	980	480	976	7	10	24
EAST NORTH CENTRAL												
Ohio.....	5	8	8	5	3	8	1,155	509	292	2	4	11
Indiana.....	16	17	12	14	137	40	557	43	320	0	0	4
Illinois.....	2	8	13	2	6	8	2,677	64	835	4	5	20
Michigan.....	7	7	7	2	1	2	1,657	68	68	1	3	8
Wisconsin.....	1	0	0	62	11	59	724	255	729	2	3	4
WEST NORTH CENTRAL												
Minnesota.....	7	8	7	4	-----	1	292	53	53	1	3	3
Iowa.....	1	5	4	13	-----		669	94	94	0	1	1
Missouri.....	1	1	4	10	90	7	186	8	387	3	2	7
North Dakota.....	2	0	0	-----	12	12	24	6	6	0	0	1
South Dakota.....	0	3	1	-----			20	8	68	0	1	0
Nebraska.....	1	0	2	19	15	15	96	20	56	2	0	0
Kansas.....	5	7	7	3	325	9	27	10	428	1	0	2
SOUTH ATLANTIC												
Delaware.....	0	0	0	-----			35	2	20	0	0	1
Maryland.....	7	6	9	2	2	12	78	20	59	1	1	6
District of Columbia.....	0	0	0	-----	2	2	159	9	113	0	1	1
Virginia.....	9	5	5	724	491	595	112	547	547	4	1	10
West Virginia.....	1	2	2	82	52	38	223	80	42	2	0	2
North Carolina.....	8	11	11	-----			10	257	257	0	0	8
South Carolina.....	9	2	2	804	628	705	55	75	75	4	0	4
Georgia.....	2	4	4	43	454	115	119	229	224	2	0	4
Florida.....	5	4	2	4	1	3	132	6	47	3	2	7
EAST SOUTH CENTRAL												
Kentucky.....	6	7	5	1	14	35	21	286	286	6	8	8
Tennessee.....	3	7	5	81	33	43	187	164	242	3	3	7
Alabama.....	8	9	8	205	130	198	92	69	69	2	3	4
Mississippi.....	3	10	10	91	-----		67	-----	-----	1	1	5
WEST SOUTH CENTRAL												
Arkansas.....	4	5	5	249	376	174	228	130	90	1	1	3
Louisiana.....	4	10	2	55	54	54	4	27	27	2	6	6
Oklahoma.....	2	10	10	137	62	198	38	4	34	3	0	1
Texas.....	13	22	35	3,283	3,636	1,634	1,824	286	472	4	9	9
MOUNTAIN												
Montana.....	2	1	1	32	20	20	71	188	162	0	0	0
Idaho.....	11	1	1	13	10		53	5	86	0	0	0
Wyoming.....	0	4	0	-----	31	9	71	7	12	0	1	1
Colorado.....	1	8	6	60	1,212	67	329	81	275	1	0	1
New Mexico.....	2	1	1	4	6	6	19	24	12	0	0	0
Arizona.....	3	1	1	278	71	115	56	40	40	1	2	2
Utah.....	4	1	0	61	13	60	19	7	124	0	0	0
Nevada.....	0	0	0	30	-----	3	2	-----	5	0	0	0
PACIFIC												
Washington.....	0	1	5	5	13	2	230	37	151	4	2	3
Oregon.....	1	7	3	240	8	14	45	54	76	3	0	1
California.....	16	23	23	769	25	77	1,600	230	843	10	8	18
Total.....	199	281	270	7,429	7,974	5,249	18,962	6,388	18,496	91	95	267
9 weeks.....	2,012	2,724	2,750	99,620	40,591	40,673	111,135	41,825	93,989	777	762	2,254
Seasonal low week ⁴	(27th) July 5-11			(30th) July 26-Aug. 1			(35th) Aug. 30-Sept. 5			(37th) Sept. 13-19		
Total since low.....	8,370	10,290	11,290	143,178	73,566	73,566	146,081	64,712	120,113	1,559	1,734	4,705

¹ New York City only. ² Philadelphia only. ³ Period ended earlier than Saturday.

⁴ Dates between which the approximate low week ends. The specific date will vary from year to year.

Telegraphic morbidity reports from State health officers for the week ended March 6, 1948, and comparison with corresponding week of 1947 and 5-year median—Con.

Division and State	Polio-myelitis			Scarlet fever			Smallpox			Typhoid and para-typhoid fever		
	Week ended—		Median 1943-47	Week ended—		Median 1943-47	Week ended—		Median 1943-47	Week ended—		Median 1943-47
	Mar. 6, 1948	Mar. 1, 1947		Mar. 6, 1948	Mar. 1, 1947		Mar. 6, 1948	Mar. 1, 1947		Mar. 6, 1948 ¹	Mar. 1, 1947	
NEW ENGLAND												
Maine.....	0	0	0	27	21	37	0	0	0	0	1	1
New Hampshire.....	0	0	0	0	3	11	0	0	0	0	0	0
Vermont.....	0	1	0	1	4	8	0	0	0	0	0	0
Massachusetts.....	0	0	0	127	136	322	0	0	0	1	1	1
Rhode Island.....	0	0	0	7	12	17	0	0	0	0	0	0
Connecticut.....	0	1	0	38	38	61	0	0	0	1	0	1
MIDDLE ATLANTIC												
New York.....	1	1	1	256	422	569	0	0	0	1	1	5
New Jersey.....	0	0	0	100	132	144	0	0	0	0	1	1
Pennsylvania.....	0	2	0	326	259	407	0	0	0	1	3	5
EAST NORTH CENTRAL												
Ohio.....	0	2	1	404	453	453	0	0	0	1	2	0
Indiana.....	0	0	0	95	129	129	0	0	1	0	4	2
Illinois.....	0	2	0	167	166	269	0	0	0	2	4	4
Michigan ²	0	1	0	132	144	166	0	0	0	0	1	1
Wisconsin.....	0	4	0	63	62	280	0	0	0	1	0	0
WEST NORTH CENTRAL												
Minnesota.....	2	1	0	42	75	79	1	0	0	0	1	0
Iowa.....	0	0	0	48	29	71	0	0	1	0	0	0
Missouri.....	0	1	0	52	46	117	0	0	0	0	4	1
North Dakota.....	0	0	0	10	5	10	0	0	0	0	1	0
South Dakota.....	0	0	0	0	9	21	0	0	0	0	0	0
Nebraska.....	1	0	0	51	49	67	0	0	1	1	0	0
Kansas.....	0	1	0	25	53	90	2	0	0	1	1	1
SOUTH ATLANTIC												
Delaware.....	0	0	0	9	8	8	0	0	0	0	0	0
Maryland ³	0	0	0	33	26	119	0	0	0	0	0	0
District of Columbia.....	0	0	0	9	13	26	0	0	0	1	0	0
Virginia.....	1	2	2	30	50	63	0	0	0	2	4	4
West Virginia.....	0	0	0	20	17	36	0	0	0	1	0	0
North Carolina.....	2	0	0	21	41	42	0	0	0	1	0	0
South Carolina.....	1	0	0	16	9	9	0	0	0	0	0	0
Georgia.....	1	2	0	12	19	17	1	0	0	0	3	3
Florida.....	0	3	1	12	12	12	0	0	0	4	1	1
EAST SOUTH CENTRAL												
Kentucky.....	0	0	0	37	37	61	0	0	0	2	0	1
Tennessee.....	1	1	1	20	60	60	0	1	0	0	1	1
Alabama.....	2	0	0	8	14	20	0	0	0	0	0	0
Mississippi ⁴	2	5	0	6	11	10	0	0	0	2	1	1
WEST SOUTH CENTRAL												
Arkansas.....	0	1	1	11	11	11	0	0	0	1	0	1
Louisiana.....	0	0	0	6	11	11	0	0	0	3	8	1
Oklahoma.....	0	0	0	15	6	27	0	0	0	1	1	0
Texas.....	0	1	1	43	67	74	0	0	0	4	3	3
MOUNTAIN												
Montana.....	1	0	0	11	3	11	0	0	0	0	0	0
Idaho.....	6	0	0	14	15	15	0	0	0	0	0	0
Wyoming.....	0	2	0	1	20	17	0	0	0	0	0	0
Colorado.....	0	0	0	20	75	70	0	0	0	1	0	0
New Mexico.....	0	0	0	4	6	6	0	0	0	0	0	0
Arizona.....	0	0	0	3	3	13	0	0	0	0	0	0
Utah ⁵	0	0	0	24	14	38	0	0	0	0	0	0
Nevada.....	0	0	0	3	1	1	0	0	0	0	0	0
PACIFIC												
Washington.....	0	0	1	67	50	50	0	0	0	0	1	0
Oregon.....	0	2	0	26	38	38	0	0	0	0	0	0
California.....	1	15	3	100	148	227	0	0	0	3	13	3
Total.....	22	52	26	2,552	3,032	3,948	4	1	9	36	61	49
9 weeks.....	292	539	340	20,711	23,737	34,156	29	31	86	342	394	465
Seasonal low week ⁶	(11th) Mar. 15-21			(32d) Aug. 9-15			(35th) Aug. 30-Sept. 5			(11th) Mar. 15-21		
Total since low.....	*10,508 25,336 13,743			43,250 50,423 72,477			50 85 169			3,751 3,922 5,101		

¹ Period ended earlier than Saturday.

² Dates between which the approximate low week ends. The specific date will vary from year to year.

³ Including paratyphoid fever reported separately, as follows: Massachusetts 1 (salmonella infection), Ohio 1, Illinois 1, Wisconsin 1, Virginia 1, North Carolina 1, California 2.

⁴ Correction (deducted from cumulative totals): Poliomyelitis, Georgia, week ended Feb. 14, 0 (instead of 1).

Telegraphic morbidity reports from State health officers for the week ended March 6, 1948, and comparison with corresponding week of 1947 and 5-year median—Con.

Division and State	Whooping cough			Week ended March 6, 1948								
	Week ended—		Median 1943-47	Dysentery			Encephalitis, infectious	Rocky Mt. spotted fever	Tularemia	Typhus fever, endemic	Undulant fever	
	Mar. 6, 1948	Mar. 1, 1947		Ame- bic	Bacil- lary	Un- spec- ified						
NEW ENGLAND												
Maine.....	19	20	26									
New Hampshire.....	2	25	1									
Vermont.....	42	16	35									
Massachusetts.....	50	90	120		1		2					
Rhode Island.....	1	11	33									
Connecticut.....	16	62	40								4	
MIDDLE ATLANTIC												
New York.....	103	152	168	4			5				4	
New Jersey.....	48	115	115								2	
Pennsylvania.....	82	175	171	1							3	
EAST NORTH CENTRAL												
Ohio.....	81	117	135								1	
Indiana.....	31	47	29				3				1	
Illinois.....	45	91	85	3	3		2				1	
Michigan ¹	67	200	138	3							1	
Wisconsin.....	76	187	81								3	
WEST NORTH CENTRAL												
Minnesota.....	14	19	27	1							1	
Iowa.....	18	2	9								1	
Missouri.....	49	32	9			2						
North Dakota.....	21	1	1	11								
South Dakota.....	3											
Nebraska.....	12	29	4								3	
Kansas.....	39	20	37								3	
SOUTH ATLANTIC												
Delaware.....	8	5	5									
Maryland ¹	19	47	38			1						
District of Columbia.....	10	2	3								1	
Virginia.....	56	105	55	1		80	1		1	1	1	
West Virginia.....	36	37	40									
North Carolina.....	66	48	116	2								
South Carolina.....	74	22	52		2				1		1	
Georgia.....	8	67	25	1						1	1	
Florida.....	12	45	29	2	1				1	1	1	
EAST SOUTH CENTRAL												
Kentucky.....	16	32	32		1							
Tennessee.....	47	21	21						3		1	
Alabama.....	25	33	13							2	1	
Mississippi ¹	8			3	1				2		1	
WEST SOUTH CENTRAL												
Arkansas.....	76	29	16	18					1			
Louisiana.....	19	19	2	2						2	1	
Oklahoma.....	17	9	9	1					1		3	
Texas.....	435	440	215	13	154	87				5	6	
MOUNTAIN												
Montana.....	10	7	6						1			
Idaho.....	4	4	4				1				1	
Wyoming.....	3		2				1					
Colorado.....	63	7	28	1							3	
New Mexico.....	28	18	17									
Arizona.....	49	17	17			11						
Utah ¹	30	6	17								5	
Nevada.....												
PACIFIC												
Washington.....	40	48	46								8	
Oregon.....	20	13	13		5						3	
California.....	144	132	132	4	1						2	
Total.....	2,142	2,624	2,393	71	169	181	15	0	12	12	69	
Same week: 1947.....	2,624			41	245	219	10	2	24	37	173	
Median, 1943-47.....	2,393			34	245	89	10	0	12	32	785	
9 weeks: 1948.....	20,136			531	2,404	2,124	80	5	186	136	770	
1947.....	22,393			401	3,228	1,844	62	6	390	422	921	
Median, 1943-47.....	20,816			244	2,623	1,018	66	3	189	460	780	

¹ Period ended earlier than Saturday.

² 3-year median 1945-47.

Psittacosis: New York 1. *Anthrax*: New York 1, New Jersey 1.

Alaska: Chickenpox 17, mumps 1.

Territory of Hawaii: Influenza 1, leprosy 1, measles 2, endemic typhus fever 1, whooping cough 11.

WEEKLY REPORTS FROM CITIES ¹

City reports for week ended February 28, 1948

This table lists the reports from 89 cities of more than 10,000 population distributed throughout the United States, and represents a cross section of the current urban incidence of the diseases included in the table.

Division, State, and City	Diphtheria cases	Enecephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomylitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
NEW ENGLAND												
Maine:												
Portland.....	0	0		1	2	0	3	0	3	0	0	4
New Hampshire:												
Concord.....	0	0		0		0	1	0	0	0	0	
Vermont:												
Barre.....	0	0		0		0	0	0	0	0	0	
Massachusetts:												
Boston.....	5	0		2	373	0	8	0	45	0	0	9
Fall River.....	0	0		0	1	0	0	0	1	0	0	
Springfield.....	0	0		0	2	0	0	0	2	0	0	
Worcester.....	0	0		0		0	7	0	6	0	0	1
Rhode Island:												
Providence.....	0	0	1	1	3	0	3	0	7	0	0	
Connecticut:												
Bridgeport.....	0	0	1	0	1	0	0	0	3	0	1	
Hartford.....	0	0		0		0	0	0	1	0	0	3
New Haven.....	0	0		0		0	2	0	3	0	0	4
MIDDLE ATLANTIC												
New York:												
Buffalo.....	0	0		0	3	0	9	0	10	0	0	7
New York.....	4	0	13	0	1,064	1	86	2	83	0	2	33
Rochester.....	0	0		0	1	0	3	0	9	0	0	
Syracuse.....	0	0		0	12	1	1	0	13	0	0	6
New Jersey:												
Camden.....	0	0		0	2	0	4	0	2	0	0	3
Newark.....	0	0		0	70	0	5	0	14	0	0	5
Trenton.....	0	0		0	3	0	1	0	2	0	0	
Pennsylvania:												
Philadelphia.....	1	0	3	2	214	5	19	0	44	0	0	31
Pittsburgh.....	1	0		0		1	13	0	26	0	0	12
Reading.....	0	0		0	4	0	3	0	9	0	0	1
EAST NORTH CENTRAL												
Ohio:												
Cincinnati.....	0	0		0	50	0	6	0	11	0	0	2
Cleveland.....	0	0	2	0	1	1	6	0	44	0	0	18
Columbus.....	0	0	1	1	217	1	1	0	10	0	0	7
Indiana:												
Fort Wayne.....	0	0		0	15	0	1	0	6	0	0	
Indianapolis.....	1	0	3	1	194	1	7	0	10	0	0	14
South Bend.....	0	0		0	2	0	0	0	1	0	1	2
Terre Haute.....	0	0		0	22	0	1	0	0	0	0	1
Illinois:												
Chicago.....	1	0		0	854	2	35	0	54	0	1	18
Springfield.....	0	0		0	110	0	2	0	0	0	0	
Michigan:												
Detroit.....	5	0		0	109	0	14	0	75	0	0	22
Flint.....	0	0		0	1	0	0	0	3	0	0	
Grand Rapids.....	0	0		0	308	0	3	0	3	0	0	3
Wisconsin:												
Kenosha.....	0	0		0	89	0	0	0	0	0	0	
Milwaukee.....	0	0		0	25	0	4	0	20	0	0	9
Racine.....	0	0		0	157	0	1	0	2	0	0	1
Superior.....	0	0		0	16	0	0	0	1	0	0	3
WEST NORTH CENTRAL												
Minnesota:												
Duluth.....	0	0		0	5	0	2	0	2	0	0	1
Minneapolis.....	3	0		1	127	1	7	0	8	0	0	
St. Paul.....	2	0		0	28	1	3	0	3	0	0	1
Missouri:												
Kansas City.....	0	0	5	1	11	0	7	0	3	0	0	8
St. Joseph.....	0	0		0		0	0	0	2	0	0	
St. Louis.....	4	0		0	110	1	4	0	16	0	0	6

¹ In some instances the figures include nonresident cases.

City reports for week ended Feb. 28, 1948—Continued

Division State, and City	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Pollomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
WEST NORTH CENTRAL—continued												
North Dakota:												
Fargo.....	0	0		0	3	0	2	0	2	0	0	
Nebraska:												
Omaha.....	0	0		0	31	0	2	0	5	0	0	1
Kansas:												
Topeka.....	0	0		0	1	0	0	0	0	0	0	
Wichita.....	0	0		0	6	0	0	0	3	0	0	1
SOUTH ATLANTIC												
Delaware:												
Wilmington.....	0	0		0	16	0	4	0	1	0	0	
Maryland:												
Baltimore.....	3	0	3	3	11	0	4	0	14	0	0	12
Cumberland.....	1	0		0		0	1	0	1	0	0	1
Frederick.....	2	0		0		0	0	0	0	0	0	
District of Columbia:												
Washington.....	1	0		0	194	0	7	0	11	0	1	10
Virginia:												
Richmond.....	1	0		1		0	3	0	6	0	0	5
Roanoke.....	0	0		0		0	0	0	0	0	0	
West Virginia:												
Charleston.....	0	0		0	10	0	7	0	1	0	0	
Wheeling.....	0	0		0	2	0	1	0	1	0	0	3
North Carolina:												
Raleigh.....	0	0		0		0	0	0	1	0	0	
Winston-Salem.....	2	0		0		0	1	0	0	0	0	5
Winston-Salem.....	0	0		0	1	0	2	0	1	0	0	2
South Carolina:												
Charleston.....	0	0	115	0	2	0	0	0	0	0	0	3
Georgia:												
Atlanta.....	0	0		0	1	0	3	0	4	0	0	2
Brunswick.....	0	0		0	1	0	0	0	0	0	0	
Savannah.....	1	0	4	0		0	0	0	1	0	0	1
Florida:												
Tampa.....	0	0	3	0	38	0	4	2	1	0	0	6
EAST SOUTH CENTRAL												
Tennessee:												
Memphis.....	0	0	2	0	108	3	9	0	2	0	0	10
Nashville.....	0	0		1		0	7	0	1	0	0	
Alabama:												
Birmingham.....	0	0	1	1		0	3	0	3	0	0	2
Mobile.....	0	0	48	1		0	4	0	0	0	0	
WEST SOUTH CENTRAL												
Arkansas:												
Little Rock.....	0	0	3	1	3	0	2	0	0	0	0	2
Louisiana:												
New Orleans.....	2	0	24	6		2	46	0	3	0	0	3
Shreveport.....	0	0		0		0	1	0	1	0	0	
Oklahoma:												
Oklahoma City.....	0	0		0		0	2	0	0	0	0	
Texas:												
Dallas.....	1	0		0	19	1	6	0	2	0	0	1
Galveston.....	0	0		0		0	2	0	0	0	0	
Houston.....	0	0	4	0	38	0	7	0	2	0	0	
San Antonio.....	1	0		0	4	0	5	0	0	0	0	1
MOUNTAIN												
Montana:												
Billings.....	0	0		0	1	0	2	0	1	0	0	2
Great Falls.....	0	0		0	1	0	1	0	0	0	0	
Helena.....	0	0		0		0	0	0	0	0	0	
Missoula.....	0	0		0	7	0	0	0	0	0	0	
Idaho:												
Boise.....	0	0		0		0	3	0	0	0	0	
Colorado:												
Denver.....	1	0	4	0	145	0	1	0	2	0	0	28
Pueblo.....	0	0		0	8	0	4	0	1	0	0	13
Utah:												
Salt Lake City.....	0	0		0	9	1	1	0	7	0	0	

City reports for week ended February 28, 1948—Continued

Division, State, and City	Diphtheria cases	Enecephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomylitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
PACIFIC												
Washington:												
Seattle.....	0	0	0	0	6	0	5	0	13	0	0	7
Spokane.....	0	0	2	0	0	0	1	0	1	0	0	0
Tacoma.....	0	0	0	0	43	0	0	0	3	0	0	0
California:												
Los Angeles.....	22	0	28	0	90	0	7	0	17	0	0	11
San Francisco.....	1	0	18	1	265	0	11	0	8	0	0	2
Total.....	66	0	288	25	5,369	23	443	4	677	0	6	369
Corresponding week, 1947 ¹	81		147	15	1,371		397		739	0	2	716
Average 1943-47 ¹	72		203	31	4,575		438		1,454	1	9	625

¹ Exclusive of Oklahoma City.² 3-year average 1945-47.³ 5-year median 1943-47.

Rates (annual basis) per 100,000 population, by geographic groups, for the 89 cities in the preceding table (latest available estimated population, 34,474,000)

	Diphtheria case rates	Etiophalitis, case rates	Influenza		Measles case rates	Meningitis, meningococcus, case rates	Pneumonia death rates	Pollomyelitis case rates	Scarlet fever case rates	Smallpox case rates	Typhoid and paratyphoid fever case rates	Whooping cough case rates
			Case rates	Death rates								
New England.....	13.1	0.0	5.2	10.5	999	0.0	62.7	0.0	186	0.0	2.6	55
Middle Atlantic.....	2.8	0.0	7.4	0.9	635	3.7	66.6	0.9	98	0.0	0.9	45
East North Central.....	4.3	0.0	3.6	1.2	1,374	3.0	49.3	0.0	146	0.0	1.2	61
West North Central.....	17.9	0.0	9.9	4.0	641	6.0	53.7	0.0	88	0.0	0.0	36
South Atlantic.....	18.2	0.0	206.9	6.6	457	0.0	61.2	3.3	71	0.0	1.7	83
East South Central.....	0.0	0.0	301.0	17.7	637	17.7	135.7	0.0	35	0.0	0.0	71
West South Central.....	10.2	0.0	78.7	17.8	163	7.6	180.3	0.0	20	0.0	0.0	18
Mountain.....	7.9	0.0	31.8	0.0	1,358	7.9	95.3	0.0	87	0.0	0.0	342
Pacific.....	37.7	0.0	78.7	1.6	677	.00	39.4	0.0	69	0.0	0.0	33
Total.....	10.0	0.0	43.7	3.8	814	3.5	67.2	0.6	103	0.0	0.9	56

Dysentery, amebic.—Cases: New York 7, Chicago 1, Washington 1, Los Angeles 4.

Dysentery, bacillary.—Cases: New York 2, Los Angeles 1.

Dysentery, unspecified.—Cases: San Antonio 1.

Leprosy.—Cases: Los Angeles 1.

Typhus fever, endemic.—Cases: New Orleans 1.

DEATHS DURING WEEK ENDED FEBRUARY 28, 1948

[From the Weekly Mortality Index, issued by the National Office of Vital Statistics]

	Week ended Feb. 28, 1948	Corresponding week 1947
Data for 93 large cities of the United States:		
Total deaths.....	9,765	10,165
Median for 3 prior years.....	10,165	
Total deaths, first 9 weeks of year.....	93,716	89,943
Deaths under 1 year of age.....	600	706
Median for 3 prior years.....	689	
Deaths under 1 year of age, first 9 weeks of year.....	6,416	7,377
Data from industrial insurance companies:		
Policies in force.....	66,855,124	67,327,514
Number of death claims.....	10,707	13,999
Death claims per 1,000 policies in force, annual rate.....	8.4	10.8
Death claims per 1,000 policies, first 9 weeks of year, annual rate.....	10.0	9.8

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Week ended February 14, 1948.—During the week ended February 14, 1948, cases of certain communicable diseases were reported by the Dominion Bureau of Statistics of Canada as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Chickenpox		46		185	381	74	25	57	93	861
Diphtheria				5	5			3	4	17
Dysentery:					1					1
Amebic					2					2
Bacillary				15	27	1		14	4	61
German measles					20				22	109
Influenza		67		870	1,422	26	13	12	65	2,412
Measles		3	1							
Meningitis, meningococcus					2					2
Mumps		21	4	166	257	40	38	41	10	577
Polio-myelitis					1	1				2
Scarlet fever		3		42	59	1		9	10	124
Tuberculosis (all forms)		8	5	66	48	37		27		191
Typhoid and paratyphoid fever				7	1					8
Undulant fever				3	1				1	5
Veneral diseases:										
Gonorrhoea		10	9	106	66	38	34	32	60	355
Syphilis	1	13	7	83	42	13	14	9	29	211
Other forms									1	1
Whooping cough		2		38	13	7	3	63	18	144

NEW ZEALAND

Notifiable diseases—4 weeks ended January 31, 1948.—During the 4 weeks ended January 31, 1948, certain notifiable diseases were reported in New Zealand as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Cerebrospinal meningitis	8		Polio-myelitis	60	4
Diphtheria	27	1	Puerperal fever	11	
Dysentery:			Scarlet fever	45	
Amebic	1		Tetanus	2	
Bacillary	7		Trachoma	3	
Erysipelas	17		Tuberculosis (all forms)	204	48
Food poisoning	9		Typhoid fever	15	
Malaria	1		Undulant fever	5	
Ophthalmia neonatorum	2				

SMALLPOX VACCINATION REQUIREMENT IN VENEZUELA

Information has been received that an outbreak of variola minor has been reported in Puerto la Cruz, and that a special smallpox vaccination requirement has been imposed as follows for persons going to Puerto la Cruz and Guanta:

Shore leave passengers and crew members of vessels calling at those localities should have vaccination certificates issued within last 6 months.

WORLD DISTRIBUTION OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

From consular reports, international health organizations, medical officers of the Public Health Service, and other sources. The reports contained in the following tables must not be considered as complete or final as regards either the list of countries included or the figures for the particular countries for which reports are given.

CHOLERA

[C indicates cases]

NOTE.—Since many of the figures in the following tables are from weekly reports, the accumulated totals are for approximate dates.

Place	Janu- ary—De- cember 1947	January 1948	February 1948—week ended—			
			7	14	21	28
AFRICA						
Egypt.....C	21,920	1				
Alexandria.....C	253					
Cairo.....C	133	1				
Ismailiya.....C	99					
Port Said.....C	37					
Suez.....C	26					
ASIA						
Arabia: Amirate of Dubai.....C	1					
Burma.....C	263		1			
Moulmein.....C	66					
Rangoon.....C	4					
China:						
Anhwei Province.....C	6					
Chekiang Province.....C	288					
Pingyang.....C	150					
Wenchow.....C	1					
Formosa (Island of).....C	14					
Fukien Province.....C	16					
Foochow.....C	2					
Honan Province.....C	936					
Hunan Province.....C	16					
Kiangsi Province.....C	102					
Kiangsu Province.....C	738					
Chinkiang.....C	8					
Shanghai.....C	53					
Tsingkiang.....C	9					
Kwangtung Province.....C	6					
Hong Kong.....C	6					
Suiyuan Province.....C	52					
Szechwan Province.....C	5					
India.....C	151,248	10,865				
Ahmadabad.....C	27					
Allahabad.....C	70					
Bombay.....C	114					
Calcutta.....C	4,716	571	186	199	174	
Cawnpore.....C	332					
Chittagong (See also Pakistan).....C	32					
Lahore.....C	2,173					
Lucknow.....C	288					
Madras.....C	27	2	1		1	
Nagpur.....C	38					
New Delhi.....C	35					
India (French):						
Chandernagor.....C	33					
Karikal.....C	15					
Pondicherry.....C	37					
India (Portuguese).....C	51					
Indochina (French):						
Annam.....C	37					
Cambodia.....C	1,173	290		147		
Cochinchina.....C	541	24		19		
Bien Hoa.....C	7					
Chaudoc.....C	5	1				
Cholon.....C	33	1				
Giadinh.....C	11					
Longxuyen.....C	36					
Mytho.....C	6			4		
Rachgia.....C	22	6		5		
Saigon.....C	136	9				
Vinh-long.....C	8					
Laos.....C	55					
Tonkin.....C	67					

See footnotes at end of table.

CHOLERA—Continued

Place	Janu- ary—De- cember 1947	January 1948	February 1948—week ended—			
			7	14	21	28
ASIA—continued						
Pakistan.....	C	2,540				
Chittagong.....	C	3				
Siam (Thailand).....	C	3,451	8	1		
Bangkok.....	C	781				
Straits Settlements: Penang.....	C	1				
Syria.....	C	45	3			

¹ For the period Feb. 1-10, 1948.² Imported.

PLAGUE

[C indicates cases; D, deaths]

AFRICA							
Belgian Congo.....	C	121	2				
British East Africa:							
Kenya.....	C	60	5				
Tanganyika.....	C		1			1	
Uganda.....	C	1					
Egypt: Alexandria.....	C	24					
Madagascar.....	C	276	61				
Mananjary.....	C	8					
Rhodesia, Northern.....	C			5			
Union of South Africa.....	C	42	17	9		2	
ASIA							
Burma.....	C	1,362	167	42	21	26	
Bassein.....	C	2					
Mandalay.....	C	17					
Rangoon.....	C	19	3	1	3	2	
China:							
Chekiang Province.....	C	150					
Formosa (Island of).....	C	1					
Fukien Province.....	C	779	5				
Amoy.....	C	13					
Foochow.....	C	49					
Kiangsi Province.....	C	405	8				
Nanchang.....	C	46					
Kiangsu Province.....	C	30					
Shanghai.....	C	28					
Kwangtung Province.....	C	164					
Yunnan Province.....	C	780					
India.....	C	75,647	3,153				
Indochina (French):							
Annam.....	C	89	61		24		
Cambodia.....	C	1					
Cochinchina.....	C	31			7		
Laos State.....	C	2					
Java.....	C	39	3			1	
Korea.....	C	22					
Manchuria.....	D	100					
Palestine.....	C	43					
Siam (Thailand).....	C	67	54	16	7		
Syria.....	C	6					
Turkey: Akenkale.....	C	19					
EUROPE							
Germany: East Prussia. ¹							
Portugal: Azores.....	C	4	4				
Turkey (see Turkey in Asia).							
NORTH AMERICA							
Canada. ¹⁰							
SOUTH AMERICA							
Argentina:							
Buenos Aires Province.....	C		3				
Cordoba Province.....	C	1					
Santa Fe Province.....	C	3					
Brazil: ¹¹							
Alagoas State.....	C	1					
Ceara State.....	C	2					
Minas Geraes State.....	C	7					
Parahyba State.....	C	4					
Pernambuco State.....	C	9					

See footnotes at end of table.

PLAGUE—Continued

Place	Janu- ary—De- cember 1947	January 1948	February 1948—week ended—			
			7	14	21	28
SOUTH AMERICA—continued						
Ecuador:						
Chimborazo Province.....	C	5				
Loja Province.....	C	22	1			
Peru:						
Ancash Department.....	C	1				
Lambayeque Department.....	C	11				
Libertad Department.....	C	20				
Lima Department.....	C	56	1			
Piura Department.....	C	11 79				
OCEANIA						
Hawaii Territory: Plague-infected rats ¹¹		3	11 6		3	

¹ Includes 5 cases of pneumonic plague.² Includes 64 cases of pneumonic plague.³ Includes 4 cases of pneumonic plague.⁴ Includes 2 cases of pneumonic plague.⁵ Imported.⁶ Includes 12 cases of pneumonic plague.⁷ For the period Feb. 1-10, 1948.⁸ Period not specified.⁹ During the month of June 1947, an outbreak of plague with high mortality occurred in Königsberg, East Prussia, Germany.¹⁰ For the period July 5 to Sept. 20, 1947, 6 lots of plague-infected fleas from squirrels were reported in Alberta and Saskatchewan Provinces, Canada.¹¹ In addition, 7 cases of plague were reported in Brazil for the period Jan. 1 to May 31, 1947, specific localities not being given.¹² In addition 82 cases with 65 deaths in Ayabaca Province and 58 cases with 48 deaths in Huancabamba Province, all unconfirmed, were reported for the period September 1946 to March 1947.¹³ Plague infection was also reported in Hawaii Territory as follows: On Jan. 9, 1947, in a pool of 31 rats, on Mar. 20, 1947, in a pool of 32 fleas collected from 59 rats; under date of Feb. 27, 1948, in a mass inoculation of tissue from 19 rats.¹⁴ Includes 1 mouse.

SMALLPOX

[C indicates cases; P, present]

AFRICA							
Algeria.....	C	287					
Angola.....	C	265					
Basutoland.....	C	1	1				
Bechuanaland.....	C	38					
Belgian Congo.....	C	2,573	132			25	
British East Africa:							
Kenya.....	C	471	13	3			
Nyasaland.....	C	2,100	238				
Tanganyika.....	C	2,806	71				
Uganda.....	C	614	53	1			
Cameroon (French).....	C	139					
Dahomey.....	C	161	45			14	
Egypt.....	C	496					
Ethiopia.....	C	32					
French Equatorial Africa.....	C	12	4				
French Guinea.....	C	427			48		
French West Africa: Haute-Volta.....	C		106				
Gambia.....	C	6	9				
Gold Coast.....	C	969	129				
Ivory Coast.....	C	2,913	99		17		
Liberia.....	C	37					
Libya.....	C	2,297	32	2	10		
Mauritania.....	C	23					
Morocco (French).....	C	61	1		4		
Morocco (Int. Zone).....	C	12					
Morocco (Spanish).....	C	30					
Mozambique.....	C	28	14				
Nigeria.....	C	5,238					
Niger Territory.....	C	2,685	97				
Portuguese Guinea.....	C	3					
Rhodesia:							
Northern.....	C	171	59	21	22		
Southern.....	C	557					

See footnotes at end of table.

SMALLPOX—Continued

Place	Janu- ary—De- cember 1947	January 1948	February 1948—week ended—			
			7	14	21	28
AFRICA—continued						
Senegal.....	C	17				
Sierra Leone.....	C	422	26			
Sudan (Anglo-Egyptian).....	C	940	181	22	16	
Sudan (French).....	C	395	2			
Swaziland.....	C	11				
Togo (French).....	C	88	3	9		
Tunisia.....	C	1,192				
Union of South Africa.....	C	538	P			
ASIA						
Arabia.....	C	1				1
Burma.....	C	2,880	249	92	95	86
Ceylon.....	C	1				
China.....	C	3,394	472	131	137	98
India.....	C	53,800	8,541			
India (French).....	C	10				
India (Portuguese).....	C	12				
Indochina (French).....	C	4,905	570		150	
Iran.....	C	408	111			
Iraq.....	C	67	19	24	36	
Japan.....	C	391	1			
Korea.....	C	125				
Lebanon.....	C	22	46	4		
Malay States (Federated).....	C	4,160	215		20	
Manchuria.....	C	8				
Netherlands East Indies.....	C	4				
Pakistan.....	C		2,221	190		
Palestine.....	C		7			1
Portuguese Timor.....	C	32				
Siam (Thailand).....	C	1,369	150	70	31	
Straits Settlements.....	C	99				
Syria.....	C	27	15			
Turkey (see Turkey in Europe).						
EUROPE						
Belgium.....	C	123				
France.....	C	48				
Germany.....	C	12				
Great Britain: England and Wales.....	C	77				
Greece.....	C	10				
Irish Free State.....	C	1				
Italy.....	C	68				
Luxemburg.....	C	12				
Portugal.....	C	216	18		7	
Spain.....	C	32	14			
Switzerland.....	C	1				
Turkey.....	C	3				
NORTH AMERICA						
Guatemala.....	C	12	1			
Honduras.....	C	2				
Mexico.....	C	1,072				
Panama (Republic).....	C	1				
SOUTH AMERICA						
Argentina.....	C	38				
Brazil.....	C	488				
Colombia.....	C	3,989	484	32	66	52
Ecuador.....	C	13,003	1,721			
Paraguay.....	C	11,478	141			
Peru.....	C	422				
Uruguay.....	C	1,319				
Venezuela.....	C	15,365	1,460		112	141

¹ Includes alastrim.² For the period Feb. 1-20, 1948.³ For the period Feb. 1-10, 1948.⁴ Imported.

TYPHUS FEVER*

[C indicates cases; P, present]

Place		January-December 1947	January 1948	February 1948—week ended—			
				7	14	21	28
AFRICA							
Algeria.....	C	257					
Basutoland.....	C	15	1				
Bechuanaland.....	C	1					
Belgian Congo.....	C	382	13				
British East Africa:							
Kenya ¹	C	32	9				
Uganda.....	C	2					
Egypt.....	C	138	10		1		
Eritrea.....	C	747	4				
Ethiopia.....	C	360					
French West Africa ¹	C	2					
Gold Coast.....	C	6					
Libya.....	C	329	20	12			
Morocco (French).....	C	128	5		5		
Morocco (International Zone).....	C	27					
Morocco (Spanish).....	C	88					
Nigeria ¹	C	18	1				
Rhodesia:							
Northern.....	C	1					
Southern.....	C	1					
Senegal.....	C	2					
Sierra Leone.....	C	3					
Sudan (Anglo-Egyptian).....	C	1					
Tunisia ¹	C	694					
Union of South Africa ¹	C	443	P	P	P		
ASIA							
Arabia ¹	C	2					
Burma.....	C	3					
Ceylon.....	C	4					
China ¹	C	105	11				
India.....	C	8					
Indochina (French).....	C	79				1	
Iran.....	C	263	9				
Iraq.....	C	305	17	1	1	7	
Japan.....	C	1,115	96		16		
Java.....	C	1					
Korea.....	C	1,261					
Malay States (Federated) ¹	C	50					
Manchuria.....	C	12	5				
Palestine ¹	C	229					
Siam (Thailand).....	C	4					
Straits Settlements ¹	C	11		1			
Syria ¹	C	33	1	1			
Trans-Jordan.....	C	20	8	1			
Turkey (see Turkey in Europe)							
EUROPE							
Austria ¹	C	8					
Bulgaria.....	C	879	61				
Czechoslovakia.....	C	44					
France.....	C	4					
Germany.....	C	27	1				
Great Britain: Malta and Gozo ¹	C	25	3				
Greece ¹	C	396	23	2	1	3	
Hungary.....	C	607	18				
Italy.....	C	76	1				
Sicily.....	C	39					
Luxemburg.....	C	5	6		2	2	
Netherlands ¹	C	3		1			
Norway ¹	C	1					
Poland.....	C	542	22				
Portugal.....	C	4					
Rumania ¹	C	28,158					
Spain.....	C	188					
Switzerland ¹	C	6					
Turkey.....	C	658	63	12	11	8	
Yugoslavia.....	C	215	45				

See footnotes at end of table.

TYPHUS FEVER—Continued

Place		Janu- ary—De- cember 1947	January 1948	February 1948—week ended—			
				7	14	21	28
NORTH AMERICA							
Costa Rica ²	C	102	1				
Cuba ²	C	11	2				
Guatemala.....	C	322	18				
Jamaica ²	C	42	2				
Mexico.....	C	2,009	46	12	7		
Nicaragua.....	C	2					
Panama Canal Zone.....	C	15	1				
Panama (Republic).....	C	² 22					
Puerto Rico ¹	C	57	3				
Virgin Islands ²	C	2					
SOUTH AMERICA							
Argentina ¹	C	18					
Brazil.....	C	67	30	8	8	7	
Chile ¹	C	538	8	1	1		
Colombia.....	C	2,354	261				
Curacao ²	C	1	4				
Ecuador ¹	C	606	41	1	8		
Peru.....	C	1,397					
Venezuela ¹	C	193	5		5	1	
OCEANIA							
Australia ²	C	172	4	6	5		
Hawaii Territory ²	C	46					

*Reports from some areas are probably murine type, while others probably include both murine and louse borne types.

¹ Includes murine type.

² Murine type.

³ For the period Feb. 1-10, 1948.

⁴ Information dated December 10, 1947, stated that 100 deaths from typhus fever daily had occurred in Sinkiang Province, China, and spreading in Tihwa.

⁵ Includes imported cases.

YELLOW FEVER

[C indicates cases; D, deaths]

AFRICA							
Belgian Congo: Orientale Province ¹	C	1					
Nigeria: Ossiomo leper settlement	C	² 1					
Sudan (French): Bamako	C	3					
SOUTH AMERICA							
Brazil:							
Bahia State	D	1					
Para State	D	1					
Colombia:							
Antioquia Department	C	³ 8	² 2				
Boyaca Department	D	4					
Caldas Department	D	9	2				
Cundinamarca Department	D	2	4				
Intendencia of Meta	D	10	3				
North Santander Department	D	1					
Santander Department	D	29					
Tolima Department	D	3					
Peru: Huanuco Department	D	3					

¹ The case of yellow fever in Orientale Province, Belgian Congo, reported on p. 232 of the PUBLIC HEALTH REPORTS for Feb. 13, 1948, and also on p. 296 of the PUBLIC HEALTH REPORTS for Feb. 27, 1948, in the column for week ended Jan. 17, has not been confirmed.

² Suspected.

³ Includes deaths used as cases.

X

HEALTH PROGRAM SPECIALIST

The United States Civil Service Commission has announced an examination for filling positions as Health Program Specialists in the Public Health Service, in Washington, D. C., and throughout the United States at salaries from \$3,397 to \$7,102 a year. No written test is required for this examination.

To qualify for positions paying up to \$4,149 a year, one must have had 3 or 4 years' experience, depending upon the salary, in one or a combination of the following: Program analysis and survey, teaching graduate courses in public health administration or preventive medicine, and operating a health program or project. For the higher paying positions, applicants must have had 5 years experience of which at least 1 year must have been in operating a health program or project, and the remainder must have been in a combination of program planning, program analysis and survey, and negotiating, or in such a combination plus teaching as described above. College education may be substituted for part of the required experience. The positions to be filled involve considerable travel and frequent change of station, and applicants must be willing and able to accept assignment in any part of the United States at any time.

Age limits for Health Program Specialist positions paying \$3,397 are 18 to 45 years, and for other Health Program Specialist positions, from 18 to 62 years.

Further information and application forms may be secured at most first- and second-class post offices, from civil service regional offices, and from the United States Civil Service Commission, Washington 25, D. C. Applications must be received in the Commission's Washington office not later than April 1, 1948.



FEDERAL SECURITY AGENCY
UNITED STATES PUBLIC HEALTH SERVICE
THOMAS PARRAN, Surgeon General

DIVISION OF PUBLIC HEALTH METHODS

G. St. J. Perrott, Chief of Division

The **PUBLIC HEALTH REPORTS**, first published in 1878 under authority of an act of Congress of April 29 of that year, is issued weekly by the United States Public Health Service through the Division of Public Health Methods, pursuant to the following authority of law: United States Code, title 42, sections 241, 245, 247; title 44, section 220.

It contains (1) current information regarding the incidence and geographic distribution of communicable diseases in the United States, insofar as data are obtainable, and of cholera, plague, smallpox, typhus fever, yellow fever, and other important communicable diseases throughout the world; (2) articles relating to the cause, prevention, and control of disease; (3) other pertinent information regarding sanitation and the conservation of the public health.

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